140.6 NR Prescriptive Lighting

SECTION 140.6 – PRESCRIPTIVE REQUIREMENTS FOR INDOOR LIGHTING

A building complies with this section if the actual lighting power density calculated under Subsection (a) is no greater than the allowed indoor lighting power calculated under Subsection (c), lighting power trade-offs comply with Subsection (b) and general lighting in Secondary Sidelit Daylit Zones complies with the lighting controls requirements in Subsection (d).

(a) **Calculation of Actual Indoor Lighting Power Density.** The actual indoor lighting power of ~~the~~ all proposed building areas is the total watts of all planned permanent and portable lighting systems; subject to the following specific requirements and adjustments under Subsections 1 through 4.

EXCEPTION to Section 140.6(a): Up to ~~0.2~~ 0.3 watts per square foot of portable lighting for office areas shall not be required to be included in the calculation of actual indoor lighting power density.

~~1. Multiple interlocked lighting systems serving a space. When multiple interlocked lighting systems serve an auditorium, convention center, conference room, multipurpose room, or theater, the watts of all systems except the system with the highest wattage may be excluded if the lighting systems are interlocked with a non-programmable double throw switch to prevent simultaneous operation.~~

1. **Two interlocked lighting systems**: When two interlocked lighting systems meet all of the following requirements, the watts of the lower wattage system may be excluded if:

   A. An appropriately signed Installation Certificate specifically detailing compliance with Section 140.6(a)1 is submitted,

   B. The applicable requirements of Section 130.4 are met,

   C. The area, as defined in Section 100.1, is only the following types of function areas: Auditorium, convention center, conference room, multipurpose room, or theater,

   D. The two lighting systems are interlocked with a non-programmable double throw switch to prevent simultaneous operation.

~~2. Reduction of wattage through controls. The controlled watts of any luminaire may be reduced by the number of controlled watts times the applicable Power Adjustment Factor (PAF) from TABLE 146-C if:~~

~~A. The control complies with the applicable requirements of Section 119; and~~

~~B. At least 50 percent of the light output of the luminaire is within the applicable space listed in TABLE 146-C; and~~

~~Except as noted in TABLE 146-C, only one PAF is used for the luminaire; and~~

~~Multi-level occupant sensors used to qualify for the PAF in any space less than or equal to 250 square feet enclosed by floor-to-ceiling partitions, or any size classroom, corridor, conference or waiting room, shall meet the applicable requirements of Section 119. The multi-level occupancy sensor shall be installed to meet all the multi-level and uniformity requirements of Section 131(b) for the controlled lighting. The first stage shall activate between 30-70 percent of the lighting power in a room either through an automatic or manual action, and may be a switching or dimming system. After that event occurs any of the following actions shall be assigned to occur when manually called to do so by the occupant:~~

~~i. Activating the alternate set of lights.~~

~~ii. Activating 100 percent of the lighting power.~~

~~iii. Deactivating all lights.~~

2. **Reduction of wattage through controls.** The installed watts of a luminaire may be reduced by the number of controlled watts times the applicable PAF from TABLE 140.6-A if the following conditions are met:

A. A completed and signed Installation Certificate, specifically detailing compliance with the applicable requirements of Section 140.6(a)2, is submitted,

B. The applicable requirements of Section 110.9, and Sections 130.0 through 130.5 shall be met,

C. PAFs shall be available only for general lighting in function areas specifically listed in TABLE 140.6-A, as defined in Section 100.1,

D. PAFs shall be available only for permanently installed general lighting systems controlled with permanently installed nonresidential-rated lighting controls. Portable lighting, portable lighting controls, and residential rated lighting controls shall not qualify for PAFs.

EXCEPTION to Section 140.6(a)2D. In offices, furniture mounted luminaires that meet all of the following conditions shall qualify for a PAF:

i. The furniture mounted lighting system shall be installed at the time of building permit inspection.

ii. The luminaires shall be permanently hardwired,

iii. The lighting system shall be designed to provide indirect general lighting,

iv. Before calculating the allowed PAF for a qualifying function area, O.3 watts per square foot shall be subtracted from the permanently installed furniture mounted lighting system, to account for portable lighting in accordance with EXCEPTION to Section 140.6(a),

v. Portable lighting controls, plug-in lighting controls, and residential rated lighting controls shall not qualify for PAFs,

vi. The lighting control complies with all other applicable requirements in Section 140.6(a)2.

E. At least 50 percent of the light output of the controlled luminaire shall be within the applicable function area listed in TABLE 140.6-A

F. PAFs shall not be added together. Only one PAF shall be used for a qualifying luminaire

G. Only lighting wattage directly controlled in accordance with Section 140.6(a)2 shall be used to determine adjusted power. If only a portion of the wattage in a qualifying luminaire is controlled in accordance with this item, then only that portion of controlled wattage shall be used to determine adjusted power. The adjusted power shall be determined by multiplying the controlled wattage times the allowed PAF in accordance with Table 140.6-A.

H. Lighting controls used to qualify for a PAF shall be in addition to manual, multi-level, and automatic lighting controls required in Section 130.1. PAFs shall not be available for lighting controls required by Title 24, Part 6,

EXCEPTION to Section 140.6(a)2H. Lighting controls installed to comply only with Section 130.1(b)4 may be used to qualify for a PAF, provided the lighting controls are in addition to manual, and automatic lighting controls required in Section 130.1.

I. To qualify for the PAF for a multi-level occupancy sensing device in accordance with Table 140.6-A, an occupancy sensing device shall meet all of the following requirements:

i. The PAF shall be available only for function areas that qualify as the following: Any area less than or equal to 250 square feet enclosed by floor-to-ceiling partitions, any size classroom, any size conference room, or any size waiting room,

ii. The occupancy sensing device shall automatically deactivate all of the lighting power in the area within 30 minutes after the room has been vacated,

iii. The first stage shall automatically activate between 30-70 percent of the lighting power in the area and may be a switching or dimming system,

iv. Switches shall be located in accordance with Section 130.1(a) that allow occupants to manually do all of the following: Activate the alternate set of lights, activate 100 percent of the lighting power, and deactivate all of the lights.

J. To qualify for the PAF for an occupancy sensing device controlling the general lighting in open plan office areas above workstations, in accordance with Table 140.6-A, the following requirements shall be met:

i. The open plan office area shall be greater than 250 square feet.

ii. This PAF shall be available only in office areas which shall contain workstations.

iii. Controlled luminaires shall only be those which provide general lighting are directly above the controlled area, or luminaires that comply with EXCEPTION to Section 140.6(a)2D and provide general lighting directly above the controlled area.

iv. Qualifying luminaires shall be controlled by a fully functional occupancy sensing device as follows:

a. Infra-red sensors shall be equipped or fitted with lenses or shrouds to prevent them from reacting to movement outside of the controlled area.

b. Ultrasonic sensors shall be tuned to reduce their sensitivity to the point where they are not triggered by movements outside of the controlled area.

c. Other occupant sensing technologies shall be installed and adjusted as necessary so that they are not triggered by movements outside of the controlled area.

iv. The PAFs shall be determined according to the size of the controlled areas, in accordance with Table 140.6-A, as follows:

a. At least one occupancy sensing device per 125 square feet or less

b. At least one occupancy sensing device per 126 to 250 square feet

c. At least one occupancy sensing device per 251 to 500 square feet

K. To qualify for the PAF for a dimming lighting control in accordance with Table 140.6-A, the following requirements shall be met:

i. Only hotel and motel function areas, dining areas, auditorium areas, and theater areas shall qualify for this PAF.

ii. The lighting shall be controlled with a fully functional dimmer control or multi-scene programmable control that can be manually operated.

L. To qualify for the Demand Responsive Control PAF in accordance with Table 140.6-A, the controlled lighting shall be capable of being automatically reduced by a demand responsive lighting control in accordance with the applicable requirements in Section 130.1(e)1A and B.

M To qualify for the dimming lighting control plus the multi-level occupancy sensing device in accordance with Table 140.6-A, the lighting controls shall comply with the applicable requirements in Section 140.6(c)2K, and lighting shall be controlled with a fully functional dimmer control or multi-scene programmable control that can be manually operated.~~For automatic daylighting control PAFs, the luminaire(s) shall be controlled by the automatic~~

daylighting control(s) complying with applicable requirements of Section 119 and installed according to Section 131(c)2D. The PAF's are calculated based on PAFs described below in Section 146(a) 2E (i through iii), and at least 50 percent of the controlled luminaires shall be located within the daylit area. Daylight controls shall not control lamps that are outside of the daylight area (skylit, primary sidelit, and/or secondary sidelit daylight areas). The daylight area associated with the daylighting control receiving the PAF shall be shown on the building plans. PAFs shall not be available for automatic daylighting controls required by Section 131(c)2B and C.

Power Adjustment Factor for controlling Primary Sidelit Daylight Areas:

The PAF for the primary sidelit daylight area shall be used only if the daylighting control is separately controlling lighting within the primary sidelit daylight area. If lighting in the primary sidelit area is controlled together with lighting in the secondary sidelit area, the PAF for the secondary sidelit area in accordance with Section 146(a) 2Eii shall be used. The PAF is a function of the effective aperture of the primary sidelit daylight area in accordance with Equation 146-A.

Equation 146-A – Effective Aperture OF the primary sidelit area

$$\text{Primary Sidelit Effective Aperture} = \frac{\sum \text{Window Area} \times \text{VT}}{\text{Primary Sidelit Daylight Area}}$$

Where:

Window Area = rough opening of windows adjacent to the sidelit area, ft²

Window VT = visible light transmittance of window, no units

Primary Sidelit Daylight Area = see Section 131(c)1 daylight area, primary sidelit

Power Adjustment Factor for controlling secondary sidelit areas:

To qualify for the secondary sidelit daylight area PAF, the lighting in the secondary sidelit daylight area, or the lighting in the combined primary and secondary sidelit areas shall be controlled separately from lighting outside of these sidelit areas. The PAF is a function of the effective aperture of the secondary sidelit area in accordance with Equation 146-B.

Equation 146-B – Effective Aperture OF the Secondary sidelit area

$$\text{Secondary Sidelit Effective Aperture} = \frac{\sum \text{Window Area} \times \text{VT}}{\text{Secondary Sidelit Daylight Area} + \text{Primary Sidelit Daylight Area}}$$

Where:

Window Area = rough opening of windows adjacent to the sidelit area, ft²

Window VT = visible light transmittance of window, no units

Primary Sidelit Daylight Area = see Section 131(c)1B daylight area, primary sidelit

Secondary Sidelit Daylight Area = see Section 131(c)1C daylight area, secondary sidelit.

Power Adjustment Factor for controlling skylit areas.

The PAF is a function of the lighting power density of the general lighting in the space and the effective aperture of the skylights shall be determined in accordance with Equation 146-C.

Equation 146-C – Effective Aperture OF Skylights

$$\text{Skylit Effective Aperture} = \frac{0.85 \times \sum \text{Skylight Area} \times \text{VT} \times \text{Well Efficiency}}{\text{Skylit Daylight Area}}$$

~~Where:~~

~~Skylight Area = the area of each individual skylight~~

~~Skylit Daylight Area = see Section 131(c)1D daylight area, skylit~~

~~VT = visible light transmittance. The VT shall include all skylighting system accessories including diffusers, louvers and other attachments that impact the diffusion of skylight into the space. The visible light transmittance of movable accessories shall be rated in the full open position. When the visible light transmittance of glazing and accessories are rated separately, the overall glazing transmittance is the product of the visible light transmittances of the glazings and accessories.~~

~~Well Efficiency equals the ratio of the amount of visible light leaving a skylight well to the amount of visible light entering the skylight well. Well Efficiency shall be determined from Equation 146-F or Table 146-B for specular and tubular light wells and from Table 146-A for all other light wells, based on the weighted average reflectance of the walls of the well and the geometry of the light well, or other test method approved by the Commission.~~

~~The well efficiency for non-specular or non-tubular light wells is based on the average weighted reflectance of the walls of the light well and the well cavity ratio. The well cavity ratio (WCR) is determined by the geometry of the skylight well and shall be determined using either Equation 146-D or Equation 146-E.~~

~~EQUATION 146-d Well cavity ratio for rectangular wells~~

$$\text{WCR} = \left(\frac{5 \times \text{well height} \left(\text{well length} + \text{well width} \right)}{\text{well length} \times \text{well width}} \right)$$

~~; or~~

~~EQUATION 146-e Well cavity ratio for non-rectangular-shaped wells:~~

$$\text{WCR} = \left(\frac{2.5 \times \text{well height} \times \text{well perimeter}}{\text{well area}} \right)$$

~~Where the well perimeter and well area are measured at the bottom of the well.~~

~~EQUATION 146-F WELL EFFICIENCY FOR SPECULAR TUBULAR LIGHT WELLS:~~

$$WE_{Tube} = \rho^{\left(2.2 * \frac{L}{D} \right)}$$

~~Where:~~

~~ρ = specular reflectance of interior light well wall~~

~~L/D = ratio of light well length to light well interior diameter~~

~~PAFs shall not be available for demand responsive lighting controls required by Section 131(g).~~

3. **Lighting wattage excluded.** The watts of the following lighting applications may be excluded from Section 140.6(c):

   A. In theme parks: Lighting for themes and special effects.

   B. Studio lighting for film or photography provided that these lighting systems are separately switched from a general lighting system.

   C. Lighting for dance floors, lighting for theatrical and other live performances, and theatrical lighting used for religious worship, provided that these lighting systems are additions to a general lighting system and are separately controlled by a multiscene or theatrical cross-fade control station accessible only to authorized operators.

D. In civic facilities, transportation facilities, convention centers, and hotel function areas: Lighting for temporary exhibits, if the lighting is an addition to a general lighting system and is separately controlled from a panel accessible only to authorized operators.

E. Lighting installed by the manufacturer in ~~refrigerated cases,~~ walk-in freezers, vending machines, food preparation equipment, and scientific and industrial equipment.

F. In medical and clinical buildings: Examination and surgical lights, low-ambient night-lights, and lighting integral to medical equipment, provided that these lighting systems are additions to and separately switched from a general lighting system.

G. Lighting for plant growth or maintenance, if it is controlled by a multi-level astronomical time-switch control that complies with the applicable provisions of Section ~~119~~110.9.

H. Lighting equipment that is for sale.

I. Lighting demonstration equipment in lighting education facilities.

J. Lighting that is required for exit signs subject to the CBC. Exit signs shall meet the requirements of the Appliance Efficiency Regulations.

K. Exitway or egress illumination that is normally off and that is subject to the CBC.

L. In hotel/motel buildings: Lighting in guestrooms (lighting in hotel/motel guestrooms shall comply with Section ~~130~~130.0(b).

M. In high-rise residential buildings: Lighting in dwelling units (Lighting in high-rise residential dwelling units shall comply with Section ~~130~~130.0(b).

N. Temporary lighting systems as defined in Section 100.1.

O. Lighting in occupancy group U buildings less than 1000 square feet.

P. Lighting in unconditioned agricultural buildings less than 2500 square feet.

Q. Lighting systems in qualified historic buildings, as defined in the State Historic Building Code (Title 24, Part 8), are exempt from the lighting power allowances, if they consist solely of historic lighting components or replicas of historic lighting components. If lighting systems in qualified buildings contain some historic lighting components or replicas of historic components, combined with other lighting components, only those historic or historic replica components are exempt. All other lighting systems in qualified historic buildings shall comply with the lighting power allowances.

R. Lighting in nonresidential parking garages for seven or less vehicles: Lighting in nonresidential parking garages for seven or less vehicles shall comply with the applicable residential parking garage provisions of Section 150.0(k).

S. Lighting for signs: Signs shall comply with Section 140.8.

~~T. Lighting in a videoconferencing studio: Up to 2.5 watts per square foot of lighting in a videoconferencing studio, provided the videoconferencing lighting is in addition to and separately switched from a general lighting system, all of the lighting is controlled by a multiscene programmable control system, and the video conferencing studio has permanently installed videoconferencing cameras, audio equipment, and playback equipment.~~

~~U~~T. Lighting for automatic teller machines that are located inside parking garages.

U. Lighting in refrigerated cases less than 3,000 square feet. (Refrigerated cases less than 3.000 square feet shall comply with the Title 20 Appliance Efficiency Regulations.)

V. Lighting in elevators meeting the requirements of ASHRAE/IESNA Standard 90.1, 2010

4. **Luminaire Power.** Luminaire power shall be determined in accordance with Section ~~130~~130.0~~(d) and (e)~~(c). ~~or by a method approved by the Commission.~~

~~(~~(b) **Indoor Lighting Power Trade-offs.** Indoor lighting power trade-offs shall be determined as follows:

1. Allowed lighting power for conditioned and unconditioned areas shall be separate allotments, which shall be met separately without trade-offs between the separate allotments.

2. Allowed lighting power for indoor and outdoor areas shall be separate allotments, which shall be met separately without trade-offs between the separate allotments.

3. Allowed lighting power determined according to the Complete Building Method may be traded only within a single building. ~~Allowed lighting power shall not be traded between two or more buildings using the Complete Building Method. Conditioned and unconditioned spaces shall be separate allotments, which shall be met separately without trade-offs between the separate allotments.~~

~~2~~4. Allowed lighting power for general illumination determined according to the Area Category Method may be traded only between ~~the~~ primary function areas using the Area Category Method. ~~Conditioned and unconditioned spaces shall be separate allotments, which shall be met separately without trade-offs between the separate allotments.~~

5. ~~**EXCEPTION to Section 146(b)2:**~~ Additional allowed lighting power ~~allowed~~ determined according to ~~TABLE 146-F~~ Section 140.6(c)2G and TABLE 140.6-C~~TABLE 146-~~ footnotes shall ~~not be traded~~ be separate allotments without trade-offs between the separate allotments, and shall not be traded to general illumination.

~~3~~6. Allowed lighting power for wall display, floor display, ~~and~~ ornamental/special effects, and very valuable display case lighting determined according to the Tailored Method shall be separate allotments without trade-offs between the separate allotments, and shall not be traded to general illumination.

7. Allowed lighting power for general illumination determined according to the Tailored Method may be traded only within ~~the~~ primary function areas using the Tailored Method.

~~4~~8. Allowed lighting power shall not be traded between the Complete Building Method, Area Category Method or Tailored Method.

EXCEPTION to Section 140.6(b)~~48~~: Allowed lighting power for general illumination determined according to the Area Category Method may be traded ~~from primary function areas using the Area Category Method~~ to ~~primary function areas using~~ the Tailored Method for general illumination, wall display, floor display, ornamental/special effects, or very valuable display case lighting, provided that the Area Category Method and the Tailored Method shall not use the same floor area for determining allowed lighting power.

~~5. Trading off lighting power allowances between indoor and outdoor areas shall not be permitted.~~

(c) **Calculation of Allowed Indoor Lighting Power Density.** The allowed indoor lighting power density for each building type ~~of use~~, or each primary function area shall be calculated using ~~one and~~ only one of the methods in Subsection 1, 2 or 3 below, as applicable.

1. **Complete Building Method.** Requirements for using the Complete Building Method include all of the following:

   A The Complete Building Method shall be used only for building types specifically listed in Table 140.6-B as defined in Section 100.1. Retail and wholesale stores, hotel/motel, and high-rise residential buildings shall not use this method.

   B Shall be used o~~o~~nly on projects involving:

      i. -E~~e~~ntire buildings with one type of use occupancy, -or

      EXCEPTION to Section 140.6(c)1Bi: If a parking garage plus another type of use specifically listed in Table 140.6-B are part of a single building, the parking garage portion of the building and other type of use portion of the building shall each separately use the Complete Building Method.

      ii. ~~m~~Mixed occupancy buildings where one type of use ~~occupancy~~ makes up at least 90 percent of the entire building, or

iii. A~~a~~ tenant space where one type of use makes up at least 90 percent of the entire tenant space.

C. ~~This approach s~~Shall only be used only when the applicant is applying for a lighting permit and submits plans and specifications for the entire building or the entire tenant space.

D. Under this approach, the allowed lighting power ~~density~~ is the lighting power density value in TABLE 140.6-B~~TABLE 146~~ ~~TABLE 146-E~~ times the floor area of the entire building. ~~Retail and wholesale stores, hotel/motel, and high-rise residential buildings shall not use this method.~~

~~**EXCEPTION to Section 146(c) 1:** When using the Complete Building Method, if a parking garage and another Type of Use are part of a single building, the parking garage portion of the building and the remaining portion of the building shall each separately use the Complete Building Method type of use categories from~~ TABLE 146 ~~TABLE 146-E.~~

2. **Area Category Method.** Requirements for using the Area Category Method include all of the following:

A. The Area Category Method shall be used for primary function areas listed in Table 140.6-C as defined in Section 100.1.

B~~Under the Area Category Method, the total allowed lighting power for the building is the sum of all allowed lighting powers for all areas in the building.~~ Primary Function Areas in Table 140.6-C shall not apply to a complete building. Each primary function area shall be determined as a separate area.

C For purposes of compliance with Section 140.6(c)2~~the Area Category Method~~, an "area" shall be defined as all contiguous ~~space~~areas which accommodate or are associated with a single ~~one of the~~ primary function areas~~s~~ listed in TABLE 140.6-C~~TABLE 146~~ ~~TABLE 146-F~~.

D Where areas are bounded or separated by interior partitions, the floor ~~space~~area occupied by those interior partitions ~~shall~~ may be included in a~~ny~~ Primary Function A~~a~~rea.

E If at the time of permitting a tenant is not identified for a multi-tenant ~~space~~area, the ~~t~~Tenant ~~l~~Leased ~~s~~Space ~~allowance~~ from TABLE 140.6-C~~TABLE 146~~ ~~TABLE 146-F~~ shall be used.

F. Under this approach, the allowed general lighting power is the lighting power density value in TABLE 140.6-C times the floor area of the primary function. The total allowed lighting power for the building is the sum of all allowed lighting powers for all areas in the building.~~When the Area Category Method is used to calculate the allowed total lighting power for an entire building, main entry lobbies, corridors, restrooms, and support functions shall be treated as separate areas.~~

G Additional lighting power is available for specialized task work, ornamental, precision, accent, display, decorative, and white boards and chalk boards, in accordance with the footnotes in TABLE 140.6-C only under the following conditions:

i. Only primary function areas having a footnote next to the allowed lighting power density in TABLE 140.6-C shall qualify for the added lighting power in accordance with the correlated footnote listed at the bottom of the table.

ii. The added lighting power shall be used only if the plans clearly identify all task areas and the lighting equipment designed to illuminate these tasks.

iii. Tasks that are performed less than two hours per day or poor quality tasks that can be improved are not eligible for these allowances.

iv. The additional lighting power shall not utilize the same types of luminaires as are used for general lighting.

v. This added lighting power shall not be used when using the Complete Building Method, or the Tailored Lighting Method of compliance.

vi. The smallest of the added lighting power listed in each footnote, or the actual design wattage, may be added to the allowed lighting power.

vii. Up to 1.5 watts per square foot of additional lighting power shall be allowed in a videoconferencing provided the following conditions are met:

a. A completed and signed Installation Certificate, specifically detailing compliance with the applicable requirements of Section 140.6(c)2G, shall be submitted,

b. The videoconferencing studio is certified as meeting the Acceptance Requirements for Code Compliance in accordance with Section 130.4

c. The Videoconferencing Studio is a room with permanently installed videoconferencing cameras, audio equipment, and playback equipment for both audio-based and video-based two-way communication between local and remote sites

d. General lighting is switched in accordance with Table 131-A

e. Wall wash lighting is separately switched from the general lighting system

f All of the lighting is controlled by a multiscene programmable control system (scene preset control system)

3. **Tailored Method.** Requirements for using the Tailored Method include all of the following:

A. ~~The Tailored Method shall be used only on projects with primary function areas that do not use the Area Category Method.~~ The Tailored Method shall be used only for primary function area listed in Table 140.6-D, and for IES allowances listed in Section 140.6(c)3H.

B. General lighting power allowances shall be determined according to Section 140.6(c)3(G or H). General lighting shall not qualify for a mounting height multiplier.

C For purposes of compliance with Section 140.6(c)3, an "area" shall be defined as all contiguous areas which accommodate or are associated with a single primary function area listed in TABLE 140.6-D.

D Where areas are bounded or separated by interior partitions, the floor area occupied by those interior partitions may be included in the Primary Function Area.

E. Additional allowed lighting power for wall display, floor display and task lighting, ornamental/special effects, and very valuable display cases shall be determined according to Section 140.6(c)3(I through L).

F. The general lighting system shall not use narrow bean direction lamps, wall-washer, valance, direct cove, or perimeter linear slot types of lighting systems. ~~Under the Tailored Method, the allowed indoor lighting power shall be calculated according to primary function type as permitted in column 1 of TABLE 146-G.~~

~~A. TABLE 146 For all spaces, determine the general lighting allowance according to Section 146(c)3A.~~

~~i. If a specific IESNA Illuminance Category is listed in Column 2 of TABLE 146 TABLE 146-G, then such illuminance Category shall be used. Otherwise, determine the illuminance category for each lighting primary function type according to categories specified in the IESNA Lighting Handbook (IESNA HB), using the "Design Guide" for illuminance. Tasks that are performed less than 2 hours a day or poor quality tasks that can be improved shall not be employed to justify use of Illuminance Categories E, F, or G.~~

G. Determine allowed general lighting power for primary function areas listed in Table 140.6-D as follows:

i. Use the IES Illuminance values (Lux) listed in Column 2 to determine the Allowed General Lighting Power for the area.

~~ii. Determine the area of each primary function.~~

~~i~~ii. Determine the room cavity ratio (RCR) for each primary function area. The RCR shall be calculated ~~using either EQUATION 146-G or EQUATION 146-H~~ according to the applicable equation in Table 140.6-F.

iii. Find the allowed lighting power density in Table 140.6-G using information determined in accordance with items i and ii.

iv. Determine the area of each primary function in accordance with Section 140.6(c)3(C and D).

~~*EQUATION 146-G ROOM CAVITY RATIO FOR RECTANGULAR ROOMS*~~

$$\text{~~RCR~~} = \frac{5 \times H \times (L + W)}{L \times W}$$

~~*EQUATION 146-H ROOM CAVITY RATIO FOR IRREGULAR SHAPED ROOMS*~~

$$\text{~~RCR~~} = \frac{2.5 \times H \times P}{A}$$

~~WHERE:~~

~~*L* = Length of room.~~

~~*W* = Width of room.~~

~~*H* = Vertical distance from the work plane to the centerline of the lighting fixture.~~

~~*P* = Perimeter of room.~~

~~*A* = Area of room.~~

~~i~~v. Multiply ~~the area of each primary function by~~ the allowed lighting power density in accordance with item iii by the area of each primary function in accordance with item iv~~for the illuminance category and RCR for each primary function area according to TABLE 146-I~~. The product ~~or the actual installed lighting power for the primary function, whichever is less,~~ is the Allowed General Lighting Power for the ~~space~~area.

H. Determine allowed general lighting power only for primary function areas listed in this subsection as follows:

i. Section 140.6(c)3H shall be used to determine general lighting power only for primary function areas listed below:

a. Exercise Center, Gymnasium

b. Medical and Clinical Care

c. Police or Fire Stations

d. Public rest areas along state and federal roadways

e. Other primary function areas that are not listed in TABLE 140.6-C or TABLE 140.6-D

ii When determining general lighting power allowances using Section 140.6(c)3H, additional light power for wall display, floor display and task, ornamental/special effects, and very valuable display case lighting shall not be allowed.

iii. Determine the illuminance values (Lux) for each lighting primary function type according to categories specified in the Tenth Edition IES Lighting Handbook (IES HB), using the Recommended Horizontal Maintained Illuminance Targets for Observers 25-65 years old for illuminance.

iv. Determine the room cavity ratio (RCR) for each primary function area. The RCR shall be calculated according to the applicable equation in Table 140.6-F.

v. Find the allowed lighting power density in Table 140.6-G using information determined in accordance with items iii and iv.

vi. Determine the area of each primary function in accordance with Section 140.6(c)3(C and D).

vii. Multiply the area of each primary function in accordance with item vi, by the allowed lighting power density in accordance with item v. The product is the Allowed General Lighting Power for the area.

~~B~~I. Determine additional allowed power for wall display ~~and decorative~~ lighting ~~according to Sections 146(c)3B.~~ as follows:

i. Additional wall display lighting power shall not be available when using Section 140.6(c)3H for determining general lighting power allowances.

ii ~~Displays that are installed against a wall shall not qualify for the floor display lighting power allowances.~~ Floor displays shall not qualify for ~~the~~ wall display allowances.

iii. Qualifying wall lighting systems shall:

a. Be mounted within 10 feet of the wall having the wall display. Portions of lighting track greater than 10 feet from the wall shall not be used for the wall display allowance.

b. Be a lighting system type appropriate for wall lighting including lighting track and lamp holders adjacent to the wall, wall-washer luminaires, luminaires behind a wall valance or wall cove, or accent light including adjustable or fixed luminaires with PAR, R, MR, AR, or other directional lamp types.

i

~~i~~v. ~~Separate w~~ Wall display lighting power shall be used only for a Primary Function Areas listed in TABLE 140.6-D according to the corresponding value in column 3.~~all display lighting power is permitted if allowed by column 3 of TABLE 146-G.~~

~~The allowed wall display lighting power is the smaller of:~~

~~a. The product of the room wall lengths and the listed allowed power density watts per linear foot (W/lf) in column 3 of TABLE 146-G if applicable, or b. The actual power of wall lighting systems.~~

v. This allowance shall be used only on walls having wall displays. The length of display walls shall include the length of the perimeter walls, including closable openings and permanent full height interior partitions. Permanent full height partitions are those which extend from the floor to within 2 feet of the ceiling or are taller than 10 feet, and are permanently anchored to the floor. Commercial and industrial storage stacks are not permanent full height partitions.

~~The length of display walls shall include the length of the perimeter walls, including closable openings and permanent full height interior partitions. Permanent full height partitions are those which extend from the floor to within 2 feet of the ceiling or are taller than 10 feet, and are permanently anchored to the floor. Commercial and industrial storage stacks are not permanent full height partitions. For lighting mounting height of 11 feet 6 inches above the finished floor or higher, this amount may be increased by multiplying the product by the appropriate factor from TABLE 146-H. Qualifying wall lighting systems shall be mounted within 10 feet of the wall and shall be of a lighting system type appropriate for wall lighting including a lighting track, wallwasher, valance, cove, or accent light including adjustable or fixed luminaires with PAR, R, MR, AR, or other projector lamp types.~~vi. The wall display mounting height multiplier is the appropriate factor from TABLE 140.6-E. Mounting height is distance from the finished floor to the bottom of the luminaire. Wall display lighting with varying mounting heights shall be separately determined in item vii.

vii. The allowed wall display lighting power shall be the smaller of:

a. The product of allowed wall display power in accordance with item iv, times display wall lengths in accordance with item v, times the height multiplier in accordance with item vii; or

b. The actual power used for the wall display lighting systems.

J. Determine additional allowed power for floor display lighting and/or task lighting as follows:

i. This additional floor display lighting and/or task power shall not be available when using Section 140.6(c)3H for determining general lighting power allowances.

ii Displays that are installed against a wall shall not qualify for the floor display lighting power allowances.

iii. Lighting internal to display cases shall be counted as floor display lighting in accordance with Section 140.6(c)3J; or very valuable display case lighting in accordance with Section 140.6(c)3L(iii and iv).

iv. This additional floor display and/or task power may be used by qualifying floor display lighting systems, qualifying task lighting systems, or a combination of both

v. Qualifying floor display lighting systems shall:

a. Be mounted no closer than 2 feet to a wall

b. Consist of only directional lighting types, such as PAR, R, MR, AR, or employing optics providing directional display light from non-directional lamps.

c. If track lighting is used, be only track heads that are classified as direction lighting types.

vi. Qualifying task lighting systems shall:

a. Be located immediately adjacent to and capable of illuminating the task for which it is installed.

b. Be of a type different from the general lighting system

c. Be separately switched from the general lighting system

vii. If there are illuminated floor displays, ~~Separate~~ floor display lighting power ~~is allowed~~ shall be used only if allowed by column 4 of ~~TABLE 146-G~~ TABLE 140.6-D.

viii. This allowance shall be used only on floors having floor displays or tasks having illuminance recommendations in the Tenth Edition of the IES Lighting Handbook, that are higher than the general lighting level in column 2. The floor display or tasks area shall be determine in accordance with Section 140.6(c)3(C and D), minus any floor area

designed to not have floor displays or tasks, such as floor areas designated as a path of egress.

ix. For floor display lighting where the bottom of the luminaire is 12 feet or higher above the finished floor, this amount may be increased by multiplying the floor display lighting power allowance by the appropriate factor from TABLE 140.6-E.

x. The allowed floor display lighting power shall be the smaller of:

a. (The product of allowed floor display power determined in accordance with Section 140.6(c)3Jv times floor area determined in accordance with Section 140.6(c)3Jvii times the height multiplier if appropriate in accordance with Section 140.6(c)3Jix) plus (the product of allowed task lighting power determined in accordance with Section 140.6(c)3Jvi times task area determined in accordance with Section 140.6(c)3Jvi), or

b. The actual power used for the floor display lighting systems.

~~The allowed floor display lighting power is the smaller of:~~

~~a. The product of the area of the primary function and the allowed floor display lighting power density listed in column 4 of , if applicable, or~~

~~b. The actual power of floor display lighting systems.For display lighting mounting of 11 feet 6 inches above finished floor or higher, this amount may be increased by multiplying the product by the appropriate factor from TABLE 146 . TABLE 146-H. Qualifying floor display lighting systems shall be mounted no closer than 2 feet to a wall and shall be a lighting system type such as track lighting, adjustable or fixed luminaires with PAR, R, MR, AR, or other projector lamp types or employing optics providing directional display light from non-directional lamps. Except for lighting that is external to display cases as defined below, lighting mounted inside of display cases shall also be considered floor display lighting.~~K. Determine additional allowed power for ornamental/special effects lighting as follows:

i. This additional lighting power for ornamental/special effects shall not be available when using Section 140.6(c)3H for determining general lighting power allowances.

ii. Qualifying ornamental luminaires include chandeliers, sconces, lanterns, neon and cold cathode, light emitting diodes, theatrical projectors, moving lights, and light color panels, when used in a decorative manner that does not serve as display lighting or general lighting.

~~ii~~iii. If there is qualifying ornamental/special effects lighting~~Separate~~, ornamental/special effects lighting power ~~is permitted~~ shall be used only if allowed by column 5 of

~~TABLE 146-G .~~TABLE 140.6-D.

iv. This allowance shall be used only on in areas having ornamental/special effects lighting. The floor area shall be determine in accordance with Section 140.6(c)3(C and D), not including floor areas not having ornamental/special effects lighting.

v. ~~If so, t~~The allowed ornamental/special effects lighting power is the smaller of:

a. The product of the allowed ornamental/special effects lighting power determined in accordance with Section 140.6(c)3Kiv, times floor area determined in accordance with Section 140.6(c)3Kv, ~~The product of the area of the primary function and the allowed ornamental/special effects lighting power density specified in column 5 of , if applicable,~~ or

b. The actual power of allowed ornamental/special effects lighting luminaires.

~~Qualifying ornamental luminaires include chandeliers, sconces, lanterns, neon and cold cathode, light emitting diodes, theatrical projectors, moving lights, and light color panels when used in a decorative manner that does not serve as display lighting. Ornamental/special effects lighting shall not be the only light source in the space.~~L. Determine additional allowed power for very valuable display case lighting as follows:

i. This additional lighting power for very valuable display case shall not be available when using Section 140.6(c)3H for determining general lighting power allowances.

ii. This allowance shall be used only in retail merchandise sales, museum, and religious worship function areas.

iii. To qualify for this allowance, cases shall contain jewelry, coins, fine china or crystal, precious stones, silver, small art objects and artifacts, and/or valuable collections the display of which involves customer inspection of very fine detail from outside of a locked case.

iv. Qualifying lighting includes internal display case lighting or external lighting employing highly directional luminaires specifically designed to illuminate the case or inspection area without spill light, and shall not be fluorescent lighting unless installed inside of a display case.

v. If there is qualifying very valuable display case lighting

~~iv. In retail merchandise sales, museum, and religious worship~~, in accordance with Section 140.6(c)3L(iii), the smallest of the following separate lighting power for display cases presenting very valuable display items is permitted:

a. The product of the area of the primary function and ~~1.0~~0.8 watt per square foot; or

b. The product of the area of the display case and ~~16~~12 watts per square foot, or

c. The actual power of lighting for very valuable displays.

~~Qualifying lighting includes internal display case lighting or external lighting employing highly directional luminaires specifically designed to illuminate the case or inspection area without spill light. To qualify for this allowance, cases shall contain jewelry, coins, fine china or crystal, precious stones, silver, small art objects and artifacts, and/or valuable collections the display of which involves customer inspection of very fine detail from outside of a locked case.~~

~~v. Only the general portion of the lighting power determined in Section 146(c)3A above shall be used for tradeoffs among the various occupancy or task types of the permitted space. The allowed wall display lighting power, the allowed floor display lighting power, the allowed ornamental/special effect lighting power, and the allowed lighting power for very valuable displays are "use it or lose it" power allowances that shall not be traded off.~~EQUATION 146-GEQUATION 146-HTABLE 146-TABLE 146- TABLE 146-E

(d) **Automatic Daylighting Controls in Secondary Daylit Zones.** Luminaires providing general lighting that are in, or partially in, the Secondary Sidelit Daylit Zones, and not included in the Primary Sidelit Daylit Zones shall be controlled independently by an automatic daylighting control device that meets the applicable requirements of Section 110.9, is installed in accordance with Section 131(d)2C, and shall meet the following requirements as applicable:

1. SECONDARY SIDELIT DAYLIT ZONE is defined in Section 130.1(d),

2. All Secondary Sidelit Daylit Zones shall be shown on plan,

3. Luminaires in the Secondary Sidelit Daylit Zones shall be controlled separately from those in the Primary Sidelit Daylit Zones and Skylit Daylit Zones,

4. Luminaires that fall in a Skylit and Secondary Sidelit Daylit Zone shall be controlled as part of the Skylit Daylit Zone.

EXCEPTION 1 to Section 140.6(d): Total wattage of general lighting that is in or partially in a Secondary Sidelit Daylit Zone(s) is less than 120 Watts

EXCEPTION 2 to Section 140.6(d): Parking garages complying with Section 130.1(d)3.

TABLE 146-A WELL EFFICIENCY FOR NON-SPECULAR OR NON-TUBULAR LIGHT WELLS

	light well wall reflectance					
WCR	ρ = 99%	ρ = 90%	ρ = 80%	ρ = 70%	ρ = 60%	ρ = 40%
0	1.00	1.00	1.00	1.00	1.00	1.00
1	1.00	0.98	0.96	0.94	0.92	0.89
2	0.99	0.95	0.91	0.88	0.84	0.78
4	0.99	0.90	0.82	0.76	0.70	0.61
6	0.98	0.85	0.74	0.65	0.58	0.48
8	0.97	0.79	0.66	0.56	0.49	0.38
10	0.96	0.74	0.59	0.49	0.41	0.31
12	0.95	0.70	0.53	0.43	0.35	0.26
14	0.95	0.66	0.48	0.38	0.31	0.22
16	0.94	0.62	0.44	0.34	0.27	0.18
18	0.93	0.59	0.41	0.31	0.24	0.16
20	0.92	0.56	0.38	0.28	0.21	0.14

TABLE 146-B WELL EFFICIENCY FOR SPECULAR TUBULAR LIGHT WELLS

	Light Well Reflectance (ρ)						
L/D	ρ = 99%	ρ = 97%	ρ = 95%	ρ = 92%	ρ = 90%	ρ = 85%	ρ = 80%
0.5	0.99	0.97	0.95	0.91	0.89	0.84	0.78
1.0	0.98	0.94	0.89	0.83	0.79	0.70	0.61
1.5	0.97	0.90	0.84	0.76	0.71	0.58	0.48
2.0	0.96	0.87	0.80	0.69	0.63	0.49	0.37
2.5	0.95	0.85	0.75	0.63	0.56	0.41	0.29
3.0	0.94	0.82	0.71	0.58	0.50	0.34	0.23
3.5	0.93	0.79	0.67	0.53	0.44	0.29	0.18
4.0	0.92	0.76	0.64	0.48	0.39	0.24	0.14
4.5	0.91	0.74	0.60	0.44	0.35	0.20	0.11
5.0	0.90	0.71	0.57	0.40	0.31	0.17	0.09
5.5	0.88	0.68	0.52	0.35	0.26	0.13	0.06
6.0	0.87	0.65	0.48	0.30	0.22	0.10	0.04

TABLE 146-C LIGHTING POWER ADJUSTMENT FACTORS

TYPE OF CONTROL		TYPE OF SPACE	FACTOR
Multi-level occupant sensor (see Note 2) combined with multi-level circuitry and switching in accordance with Section 146(a)2D		Any space ≤ 250 square feet enclosed by floor-to-ceiling partitions; any size classroom, corridor, conference or waiting room.	0.20
Multi-level occupant sensor (see Note 2) that reduces lighting power at least 50% when no persons are present. May be a switching or dimming (see Note 3) system.		Hallways of hotels/motels , multi-family, dormitory, and senior housing	0.25
		Commercial and Industrial Storage stack areas (max. 2 aisles per sensor)	0.15
		Library Stacks (maximum 2 aisles per sensor)	0.15
Dimming system	Manual	Hotels/motels, restaurants, auditoriums, theaters	0.10
	Multiscene programmable	Hotels/motels, restaurants, auditoriums, theaters	0.20
Demand responsive lighting control that reduces lighting power consumption in response to a demand response signal. (See Note 1)		All building types	0.05
Manual dimming of dimmable electronic ballasts. (see Note 3)		All building types	0.10
Demand responsive lighting control that reduces lighting power consumption in response to a demand response signal when used in combination with manual dimming of dimmable electronic ballasts (see Note 1 and 3).		All building types	0.15
Combined Controls	Multi-level occupant sensor (see Note 2) combined with multi-level circuitry and switching in accordance with Section 146(a)2D combined with automatic multi-level daylighting controls	Any space ≤ 250 square feet within a daylit area and enclosed by floor-to-ceiling partitions, any size classroom, corridor, conference or waiting room. The PAF may be added to the daylighting control credit	0.10
	Manual dimming of dimmable electronic ballasts (see Note 3) when used in combination with a multi-level occupant sensor (see Note 2) combined with multi-level circuitry and switching in accordance with Section 146(a)2D.	Any space ≤ 250 square feet enclosed by floor-to-ceiling partitions; any size classroom, corridor, conference or waiting room	0.25

Automatic multi-level daylighting controls (See Note 1)	Total primary sidelit daylight areas less than 2,500 ft² in an enclosed space and all secondary sidelit areas. (see Note 4)		Effective Aperture			
		General Lighting Power Density (W/ft²)	>10% and ≤20%	>20% and ≤35%	>35% and ≤65%	> 65%
		All	0.12	0.20	0.25	0.30
	Total skylit daylight areas in an enclosed space less than 2,500 square feet, and where glazing material or diffuser has ASTM D1003 haze measurement greater than 90%		Effective Aperture			
		General Lighting Power Density (W/ft²)	0.6% ≤ EA < 1%	1% ≤ EA < 1.4%	1.4% ≤ EA < 1.8%	1.8% ≤ EA
		LPD < 0.7	0.24	0.30	0.32	0.34
		0.7 ≤ LPD< 1.0	0.18	0.26	0.30	0.32
		1.0 ≤ LPD < 1.4	0.12	0.22	0.26	0.28
		1.4 ≤ LPD	0.08	0.20	0.24	0.28

NOTES FOR TABLE 146-C:

1. PAFs shall not be available for lighting controls required by Title 24, Part 6.

2. To qualify for the PAF the multi-level occupant sensor shall comply with the applicable requirements of Section 119.

3. To qualify for the PAF all dimming ballasts for T5 and T8 linear fluorescent lamps shall be electronic and shall be certified to the Commission with a minimum RSE in accordance with Table 146-D.

4. If the primary sidelit daylight area and the secondary sidelit daylight area are controlled together, the PAF is determined based on the secondary sidelit effective aperture for both the primary sidelit daylight area and the secondary sidelit daylight area.

TABLE 146-D RELATIVE SYSTEM EFFICIENCY (RSE) FOR DIMMABLE ELECTRONIC BALLASTS USED TO QUALIFY FOR POWER ADJUSTMENT FACTOR

RSE is required only for dimmable electronic ballasts for T5 and T8 fluorescent lighting systems used to qualify for a PAF according to Note 2 for TABLE 146-C.

Lamp Category	1 or 2 Lamps			1 x 28W Lamp	2 x 28W Lamps	1 x 54W HO Lamps	2 x 54W HO Lamps
T5	0.85			3.03	1.51	1.57	0.78
	Required Relative System Efficiency (RSE)			Corresponding Ballast Efficacy Factor (BEF) 1			
Lamp Category	1 Lamp	2 or 3 Lamps	4 Lamps	1 x 32W Lamps	2 x 32W Lamps	3 x 32W Lamps	4 x 32W Lamps
T8	0.86	0.90	0.98	2.69	1.4	0.93	0.76

1 To calculate corresponding BEFs for lamp wattages and number of lamps not shown, use the following formula:

$$BEF = \left(\frac{RSE x 100}{\#\text{ lamps x lamp watts}} \right)$$

$$RSE = \left(\frac{BallastFactor}{\text{Ballast Input Power / Total Rated Lamp Power}} \right)$$

NOTE: Total Rated Lamp Power = number of Lamps per Ballast x Rated Lamp Power.

TABLE 140.6-A LIGHTING POWER ADJUSTMENT FACTORS

TYPE OF CONTROL		**TYPE OF AREA**		**FACTOR**
To qualify for any of the Power Adjustment Factors in this table, the installation shall comply with the applicable requirements in Section 140.6(a)2				
Multi-level Occupancy sensing device		Any area ≤ 250 square feet enclosed by floor-to-ceiling partitions; any size classroom, conference or waiting room.		0.20
Occupancy sensing devices		In open plan offices greater than 250 square feet: One sensor controlling an area that is:	No larger than 125 square feet	0.40
			From 126 to 250 square feet	0.30
			From 251 to 500 square feet	0.20
Dimming system	Manual Dimming	Hotels/motels, restaurants, auditoriums, theaters		0.10
	Multiscene Programmable			0.20
Demand Responsive Control		All building types less than 10,000 square feet		0.05
Manual Dimming plus Multi-Level Occupancy Sensor		Any area ≤ 250 square feet enclosed by floor-to-ceiling partitions; any size classroom, conference or waiting room		0.25

TABLE ~~146-E~~140.6-B COMPLETE BUILDING METHOD LIGHTING POWER DENSITY VALUES (WATTS/FT²)

TYPE OF BUILDING~~USE~~	ALLOWED LIGHTING POWER
Auditorium~~s~~ Building	1.5
Classroom Building	1.1
Commercial and ~~i~~Industrial ~~s~~Storage ~~b~~Building~~s~~	0.6
Convention ~~c~~Center~~s~~ Building	1.2
Financial ~~i~~Institution~~s~~ Building	1.1
General C~~c~~ommercial Building/~~ and i~~Industrial W~~w~~ork B~~b~~uilding~~s~~	1.0
~~High bay~~	~~1.0~~
~~Low bay~~	~~1.0~~
Grocery Store~~s~~ Building	1.5
Library Building	1.3
Medical B~~b~~uilding/~~s and c~~Clinic~~s~~ Building	1.1
Office ~~b~~Building~~s~~	~~0.85~~ 0.8
Parking Garage~~s~~ Building	~~0.3~~ 0.2
Religious ~~f~~Facilit~~ies~~y Building	1.6
Restaurant~~s~~ Building	1.2
School~~s~~ Building	1.0
Theater~~s~~ Building	1.3
All others buildings	0.6

TABLE ~~146-F~~140.6-C AREA CATEGORY METHOD - LIGHTING POWER DENSITY VALUES (WATTS/FT²)

PRIMARY FUNCTION AREA		ALLOWED LIGHTING POWER (W/ft²)	PRIMARY FUNCTION		ALLOWED LIGHTING POWER (W/ft²)
Auditorium Area		1.5 ~~1~~ 3	Laboratory Area, Scientific		1.4 ~~1~~ 1
Auto Repair Area		0.9 2	Laundry Area		0.9
Beauty Salon Area		1.7	Library Area	Reading areas	1.2 3
Civic Meeting Place Area		1.3 ~~1~~ 3		Stack~~s~~ areas	1.5 3
Classroom~~s~~, ~~l~~Lecture, ~~t~~Training, ~~v~~Vocational ~~room~~Areas		1.2 5	~~Lobbies~~Lobby Area	Hotel lobby	1.1 1
Commercial and ~~i~~Industrial ~~s~~Storage Areas (conditioned and unconditioned)		0.6		Main entry lobby	1.5 1
Commercial and ~~i~~Industrial ~~s~~Storage Areas (refrigerated)		0.7	Locker/~~d~~Dressing ~~r~~Room		0.8
Convention, ~~c~~Conference, ~~m~~Multipurpose and ~~m~~Meeting ~~c~~Center~~s~~ Areas		1.4 ~~1~~ 3	Lounge/~~r~~Recreation Area		1.1
Corridor~~s~~, ~~r~~Restroom~~s~~, ~~s~~Stair~~s~~, and ~~s~~Support ~~a~~Areas		0.6	Malls and ~~a~~Atria		1.2 ~~1~~ 3
Dining Area		1.1 ~~1~~ 3	Medical and ~~c~~Clinical ~~c~~Care Area		1.2
Electrical, ~~m~~Mechanical, ~~t~~Telephone ~~r~~Rooms		0.7 2	Office~~s~~ Area	> 250 square feet	~~0.9~~ 0.75
Exercise ~~c~~Center, ~~g~~Gymnasium Areas		1.0		≤ 250 square feet	~~1.1~~ 1.0
Exhibit, ~~m~~Museum Areas		2.0	Parking Garage Area	Parking Area	~~0.2~~ 0.14
Financial ~~t~~Transaction~~s~~ Area		1.2 ~~1~~ 3		Dedicated Ramps	0.3
				~~Ramps and Entries~~Daylight Adaptation Zones 9	0.6
General ~~c~~Commercial and ~~i~~Industrial ~~w~~Work Areas	Low bay	0.9 2	Religious Worship Area		1.5 ~~1~~ 3
	High bay	1.0 2	Retail ~~m~~Merchandise ~~s~~Sales, ~~w~~Wholesale ~~s~~Showroom~~s~~ Areas		~~1.6~~ 1.2 6 and 7
	Precision	1.2 ~~3~~ 4	Tenant ~~l~~Lease ~~s~~Space		1.0
Grocery Sales Area		~~1.6~~ 1.2 6 and 7	Theater~~s~~ Area	Motion picture	0.9 ~~1~~ 3
Hotel F~~f~~unction ~~a~~Area		1.5 ~~1~~ 3		Performance	1.4 ~~1~~ 3
~~Housing, Public, and Commons Multi-family Areas, Dormitory~~		~~1.0~~	Transportation Function Area		1.2
			Videoconferencing Studio		1.2 8
~~Senior Housing~~		~~1.5~~	Waiting ~~a~~Area		1.1 ~~1~~ 3
Kitchen, ~~f~~Food ~~p~~Preparation Areas		1.6	All other areas		0.6

FOOTNOTES:

See Section 140.6(c)2 for an explanation of additional lighting power available for specialized task work, ornamental, precision, accent, display, decorative, and white boards and chalk boards, in accordance with the footnotes in this table. The smallest of the added lighting power listed in each footnote below, or the actual design wattage, may be added to the allowed lighting power only when using the Area Category Method of compliance.

Footnote number	Type of lighting system allowed	Maximum allowed added lighting power. (W/ft² of task area unless otherwise noted)
1	Specialized task work	0.2 W/ft²
2	Specialized task work	0.5 W/ft²

3	Ornamental including Chandeliers and sconces and special effects lighting	0.5 W/ft^2
4	Precision commercial and industrial work	1.0 W/ft^2
5	Per linear foot of white board or chalk board.	5.5 W per linear foot
6	Accent, display and feature lighting - luminaires shall be adjustable or directional	0.3 W/ft^2
7	Decorative lighting - primary function shall be decorative and shall be in addition to general illumination.	0.2 W/ft^2
8	Additional Videoconferencing Studio lighting complying with all of the requirements in Section 140.6(c)2G(vii)	1.5 W/ft^2
9	Daylight Adaptation Zones shall be no longer than 66 feet from the entrance to the parking garage	

~~1. The smallest of the following values may be added to the allowed lighting power for ornamental chandeliers and sconces that are in addition to and switched or dimmed on circuits different from the circuits for general lighting:~~

~~a. One watt per square foot times the area of the task space that the chandelier or sconce is in; or~~

~~b. The actual design wattage of the chandelier or sconce.~~

~~2. The smallest of the following values may be added to the allowed lighting power for specialized task work:~~

~~a. 0.5 watt per square foot times the area of the task space required for an art, craft assembly or manufacturing operation; or~~

~~b. The actual design wattage of the luminaire(s) providing illuminance to the specialized task area.~~

~~For spaces employing this allowance, the plans shall clearly identify all task spaces using these tasks and the lighting equipment designed to illuminate these tasks. Tasks that are performed less than two hours per day or poor quality tasks that can be improved are not eligible for this specialized task work allowance.~~

~~3. The smallest of the following values may be added to the allowed power for precision commercial and industrial work:~~

~~a. One watt per square foot times the area of the task space required for the precision work; or~~

~~b. The actual design wattage of the luminaire(s) providing the illuminance to the precision task area.~~

~~For spaces employing this allowance, the plans shall clearly identify all task spaces using these tasks and the lighting equipment designed to illuminate these tasks. Tasks that are performed less than two hours per day or poor quality tasks that can be improved are not eligible for this precision task work allowance.~~

~~4. The smallest of the following values may be added to the allowed lighting power for specialized task work:~~

~~a. 0.2 watt per square foot times the area of the task space required for a lab in a school; or~~

~~b. The actual design wattage of the luminaire(s) providing illuminance to the specialized task area.~~

TABLE ~~146-G~~140.6-D TAILORED METHOD SPECIAL LIGHTING POWER ALLOWANCES

1	2	3	4	5
Primary Function Area	**General Illumination ~~Category~~ Level (Lux)**	**Wall Display Power (W/ft)**	**Allowed Combined Floor Display Power and Task Lighting Power (W/ft²)**	**Allowed Ornamental/ Special Effect Lighting**
Auditorium Area	~~D~~ 300	2.25	0.3	0.5
Civic Meeting Place	~~D~~ 300	3.15	0.2	0.5
~~Commercial and industrial storage~~				
~~Inactive~~	~~B~~			
~~Active: bulky items; large labels~~	~~C~~			
~~Active: small items; small labels~~	~~D~~			
Convention, ~~c~~Conference, ~~m~~Multipurpose, and ~~m~~Meeting ~~c~~Center Areas~~s~~	~~D~~ 300	2.5	0.4	0.5
~~Correction Facility cells and day rooms~~	~~D~~	~~0~~	~~0~~	~~0~~
Dining Areas	~~B~~ 200	1.5	0.6	~~0.6~~ 0.5
~~Dressing room~~	~~D~~	~~0~~	~~0~~	~~0~~
~~Education facilities~~				
~~Classrooms, lecture, training, vocational room~~	~~D~~	~~5.5~~	~~0~~	~~0~~
~~Science Labs~~	~~E~~	~~5.5~~	~~0~~	~~0~~
~~Exercise center, gymnasium~~	~~IESNA HB~~	~~0~~	~~0~~	~~0~~
Exhibit, ~~m~~Museum Areas	~~C~~ 150	~~20.0~~ 15.0	~~1.4~~ 1.2	~~0.7~~ 0.5
Financial Transaction~~s~~ Area	~~D~~ 300	3.15	0.2	~~0.6~~ 0.5
~~Food Service Facilities~~				
~~Butcher Shop, Food Display, Galley, Kitchen, Scullery~~	~~E~~	~~0~~	~~0~~	~~0~~
~~All other~~	~~C~~	~~0~~	~~0~~	~~0~~
Grocery ~~s~~Store Area	~~D~~ 500	9.9	1.1	0
~~Housing, Public, and Commons Areas~~				
~~Multi-family~~	~~D~~	~~0~~	~~0~~	~~0.9~~
~~Dormitory, Senior Housing~~	~~D~~	~~0~~	~~0~~	~~0.9~~
Hotel ~~f~~Function ~~a~~Area	~~D~~ 400	2.25	0.2	0.5
~~Laundry~~	~~D~~	~~0~~	~~0~~	~~0~~
~~Library (Reading areas, Stacks) 1~~	~~D~~	~~0~~	~~0~~	~~0.6~~
~~Lobbies~~Lobby Area:				
Hotel lobby	~~C~~ 200	3.15	0.2	~~0.60~~ 0.5
Main entry lobby	~~C~~ 200		0.2	
~~Locker 1~~	~~C~~	~~0~~	~~0~~	~~0~~
Lounge/~~r~~Recreation Area	~~C~~ 200	7	0	~~0.7~~ 0.5
Malls and ~~a~~Atria	~~D~~ 300	3.5	0.5	~~0.6~~ 0.5
~~Medical and clinical care~~	~~IESNA HB~~	~~0~~	~~0~~	~~0~~
~~Office~~		~~0~~	~~0~~	~~0~~
~~Open office, Intensive VDT use~~	~~D~~			
~~Open office, Intermittent VDT use~~	~~E~~			
~~Private office~~	~~E~~			

~~Police or fire stations~~	~~IESNA HB~~	~~0~~	~~0~~	~~0~~
Religious ~~w~~Worship Area	~~D~~ 300	1.5	0.5	0.5
Retail ~~m~~Merchandise ~~s~~Sales, ~~w~~Wholesale ~~s~~Showrooms Areas	~~D~~ 500	~~17.0~~ 14.0	~~1.2~~ 1.0	~~0.7~~ 0.5
~~Public rest areas along state and federal roadways~~	~~IESNA HB~~	~~0~~	~~0~~	~~0~~
~~Stairways and corridors, toilets and washrooms~~	~~B~~	~~0~~	~~0~~	~~0~~
~~Tenant lease space~~	~~C~~	~~0~~	~~0~~	~~0~~
Theater~~s~~ Area:				
Motion picture	~~C~~ 200	3	0	~~0.6~~ 0.5
Performance	~~D~~ 200	6	0	~~0.6~~ 0.5
Transportation Function Area	~~D~~ 300	3.15	0.3	~~0.6~~ 0.5
Waiting ~~a~~Area	~~C~~ 300	3.15	0.2	~~0.6~~ 0.5
~~All other not included above~~	~~IESNA HB~~	~~0~~	~~0~~	~~0~~
~~1. Library stacks and locker rooms may use a room cavity ratio (RCR) of > 7 in Table 146 I.~~				

TABLE ~~146-H~~140.6-E ADJUSTMENTS FOR MOUNTING HEIGHT ABOVE FLOOR

Height in feet above finished floor and bottom of luminaire(s)	**~~Floor Display – Multiply by~~**	**Floor Display or Wall Display – Multiply by**
~~11' 6" or less~~ < 12'	~~1.0~~	1.0
~~>11' 6"~~ 12' to 16'	~~1.2~~	1.15
>16'	~~1.4~~	~~1.35~~ 1.3
~~> 20'~~	~~2.0~~	~~1.75~~

TABLE 140.6-F ROOM CAVITY RATIO (RCR) EQUATIONS

Determine the Room Cavity Ratio for Table 140.6-G using one of the following equations.
Room cavity ratio for rectangular rooms $$RCR = \frac{5 \times H \times (L + W)}{L \times W}$$
Room cavity ratio for irregular-shaped rooms $$RCR = \frac{2.5 \times H \times P}{A}$$
Where: L =Length of room; W = Width of room; H =Vertical distance from the work plane to the centerline of the lighting fixture; P = Perimeter of room, and A = Area of room

TABLE ~~146-I~~140.6-G ILLUMINANCE ~~CATEGORIES A THROUGH G LIGHTING~~LEVEL (LUX) POWER DENSITY VALUES (WATTS/FT²)

~~IESNA~~ Illuminance ~~Category~~ Level (Lux)	RCR<3.5	3.5<RCR<7.0	RCR>7.0
~~A~~ 50	~~0.2~~ 0.3	~~0.3~~ 0.4	~~0.4~~ 0.7
~~B~~ 100	~~0.4~~ 0.7	~~0.5~~ 0.9	~~0.7~~ 1.3
~~C~~ 200	~~0.6~~ 1.1	~~0.8~~ 1.5	~~1.1~~ 2.2
~~D~~ 300	~~0.9~~ 1.2	~~1.2~~ 1.7	~~1.4~~ 2.7
~~E~~ 400	~~1.3~~ 1.4	1.8	~~2.5~~ 3.0
~~F~~ 500	~~2.7~~ 1.5	~~3.5~~ 1.9	~~4.7~~ 3.3
~~G~~ 600	~~8.1~~ 1.6	~~10.5~~ 2.1	~~13.7~~ 3.6
700	1.7	2.3	3.9
800	1.8	2.6	4.1
900	1.9	3.0	4.3
1000	2.0	3.0	4.5